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Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland, 20014, giving full name, rank, corps, and old and new addresses.

The issuance of this publication approved by the Secretary of the Navy on 28 June 1961.

I-M-P-O-R-T-A-N-T N-O-T-I-C-E

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The Filarial Diseases *

Edward K. Markell MD, Clinical Associate Professor of Preventive Medicine, Stanford University School of Medicine.

Although not of great military importance save in respect to morale, the filarial diseases affect two to three hundred million people. Wucheria bancrofti and Brugia malayi account for about 190,000 cases; Onchocerca volvulus, for twenty million in Africa and about half a million in Central and South America.

Filaria are thread-like worms from three to fifty centimeters long depending on the species. They are parasitic in a wide variety of vertebrates; man is host to only a few of them. Adults living in the circulatory, lymphatic, subcutaneous, or deeper connective tissues of the host produce an elongated motile egg called a microfilaria which is released into the blood or connective tissues. The developmental cycle takes place in an insect. Larvae develop within the insect in about 10 days; they eventually penetrate to the salivary glands and/or the mouth, whence they are introduced directly into the animal host. Characteristically, they escape onto the skin and then make their way into the definitive host.

Wucheria bancrofti is distributed throughout the tropical world. Vectors include three genera of mosquitoes, Aedes, Anopheles, and Culex. The adult organism in the lymphatic system of man produces sheathed microfilariae which are found in the peripheral blood. The "sheath" is composed of thin transparent eggshell. Throughout most of the world, the appearance of microfilariae in the blood is periodic, occurring in largest numbers between 2200 and 0200 hours; in Samoa, Tahiti, and Fiji, it is non-periodic.

The first event occurring in an individual infected with W. bancrofti, 6 months to a number of years after infection, is filarial fever. This is of sudden onset preceded by a chill; fever remains high for 1 to 2 days, gradually subsiding over the next several days. A characteristic lymphangitis usually accompanies the fever. Probably representative of an allergic phenomenon, the lymphangitis is centrifugal, spreading from knee to foot rather than in the opposite direction customary in bacterial infection. Antihistamines and steroids may help at this stage. During or after an attack of lymphangitis, abscesses may develop along the course of the lymphatic vessels, and adenitis may occur in the femoral and epitrochlear regions. These abscesses may break down, revealing fragments of dead worms. Lymphangitis will lead, in a certain number of people, to the condition called elephantiasis—always a late manifestation.

* This is the fourth paper from the Tropical Medicine Symposium, USNH Oakland, Calif., March 14 and 15, 1963. The first three papers were published in the Medical News Letter of 15 November 1963. Edited by Captain Arthur J. Draper MC USN and authorized by the CO of the Hospital, Rear Admiral Cecil L. Andrews MC USN.

Elephantiasis, which involves only a small number of infected people, produces permanent enlargement of a limb, breast, scrotum, vulva, with much connective tissue proliferation, induration of the skin, and hypertrophy and verrucous changes of the skin. The incidence of elephantiasis, as seen in Tahiti, increases with age but never reaches anything like that of filariasis without elephantiasis in the same population. At the same time, the percentage of people with elephantiasis who are microfilaria carriers declines until less than half have microfilaria in the blood. The remainder have few. Very high microfilaria counts, by contrast, may be obtained in asymptomatic individuals. Therefore, it is probable that elephantiasis is attributable to individual hypersensitivity. The legs are most often involved; verrucous changes occur in the skin of the toes.

Brugia malayi, formerly Wuchereria malayi, is found along the Malay Peninsula and in scattered areas of India and Asia. Carried by Mansonia, Anopheles, and Aedes mosquitoes, the organism produces in man a disease similar to that resulting from W. bancrofti save that elephantiasis is less severe and seldom involves structures other than the legs. The adults localize in the lymphatics producing sheathed microfilariae which are both periodic and non-periodic. Brugia may be carried by cats and monkeys as well as man.

Loaiasis, from Loa loa, does not occur outside continental Africa, where it affects 13,000,000 people. The intermediate host is the mango fly, Chrysops, closely related to the U. S. deer fly. Adult worms live in the subcutaneous or deeper connective tissues of man, migrating freely around the body. Both periodic and non-periodic sheathed larvae are produced, but non-periodic forms occur only in the monkey. Monkeys can, in the laboratory, be infected by the human parasite, but it is not known whether cross-infection occurs in nature. Loa loa has a long incubation period; in some cases, symptoms do not occur for many years after infection. Two patients have been studied recently by the author; neither had been in Africa for years, 6 years in one case and 9 in the other. Passage of the worm around the eyes or across the bridge of the nose may cause the first symptoms, an intense pruritus. In these sites, the worms are readily visible. Less dramatic are calabar swellings, localized patches of subcutaneous edema several inches in diameter. They itch. Lasting only a few days, they are sometimes referred to as "fugitive swellings." It is likely that they represent an allergic reaction to either dead microfilariae or to toxic products of the worm.

Two other related parasites are: Dipetalonema perstans, found in Africa, Panama, and South America, transmitted by the small midge Culicoides; and Mansonella ozzardi, found in the West Indies, Yucatan, Panama, and South America, transmitted by the same insect. They produce no significant disease; mild allergic manifestations have been reported.

Onchocerciasis, the incidence and distribution of which has been given, is transmitted by the buffalo gnat Simulium. The worms live in subcutaneous or deeper connective tissues, producing unsheathed, non-periodic microfilariae which do not occur in the blood stream. Coiled masses of adult worms surrounded by a fibrous tissue capsule, form the onchocercoma. The disease is notably a common cause of blindness. Intense allergic erysipeloid reactions

may be produced in the skin, resulting in eventual thickening and wrinkling. Penetration of the orbit presumably causes blindness.

Drugs used in the filarial diseases include Suramin and Hetrazan. The former, which may be nephrotoxic, is given I. V. in doses of 0.2 gm initially; then 1.0 gm weekly for 5 to 7 weeks. The latter, of low toxicity but associated with a high incidence of allergic reactions, may be given in dosages of 6 mgm/kg daily over long periods.

* * * * *

Onchocerciasis *

Mario Giaquinto, Visiting Professor of Tropical Medicine, University of California Medical Center, International Center for Medical Research and Training.

Onchocerciasis is of worldwide importance; some twenty million persons in Africa and America are infected. That the infection is commonly associated with blindness and that the infection is an important cause of blindness, statistically, are points discussed in this article.

The adult worms of Onchocerca live in the human body. Some migrate freely throughout tissue spaces but, in most instances, incapsulation occurs on nodules known as onchocercomas. In these tumors, male and female forms together produce microfilariae which, by contrast with other filarial forms, do not travel in the blood stream. These are tissue parasites; they propagate throughout the lymphatic system.

The most important fact about the location of Onchocerca is that the organisms reach the eye in their larval form. Microfilariae have been found in all tissues of the eye except the lens. They have been demonstrated in the conjunctiva; they are frequently observed in the cornea where they produce changes accompanied by infiltration of leukocytes; they have been found in the iris, retina, and optic nerve. The question naturally arises, "Are the eye lesions found in patients with onchocerciasis due to that disease?"

In addressing itself to that problem, the World Health Organization selected three areas in Africa and one in Guatemala for study. Teams of ophthalmologists trained in recognition of lesions peculiar to onchocerciasis, and nutritionists particularly interested in vitamin A and B-complex components have, during the past 2 years, assembled for processing 5000 data cards. Results of the analysis have not been published, but the writer believes that onchocerciasis is of great importance in the production of blindness. In Africa, for example, the population in areas with a high incidence of infection with onchocerciasis have a high percentage of eye lesions and blindness. In certain localities, 50% of the people are blind. Where there is no onchocerciasis, the percentage of people with eye lesions and blindness is small. On certain coffee plantations in Guatemala, 78% of the population had onchocerciasis, and

* Fifth paper from the Tropical Medicine Symposium, USNH Oakland. Additional papers follow.

15% were blind. The finding of onchocerciasis in great percentages of the population might lead, however, to the calling of any lesion onchocercal. The finding of microfilaria in the optic nerve or of degenerative lesions of the fundus does not mean that all optic neuritis or retinitis is attributable to Onchocerca. Still, as in the Sudan, there are areas where the incidence of blindness in persons with onchocerciasis is five times as high as in unaffected individuals. It seems likely, then, that onchocerciasis is an important contributor to the global incidence of blindness.

Onchocerciasis as a disease is characterized by skin lesions, tumor, and eye lesions. The first phase produces acute allergic symptoms with intense pruritus; late lichenification occurs in severe cases. Tumor formation takes about 8 weeks from the moment of incurring the bite. One year elapses from the beginning of tumor and the beginning of late skin involvement as opposed to early allergic skin involvement. Eye lesions are slow in developing, and once established, progress slowly. Detection of eye lesions requires a skilled, experienced examiner; only few ophthalmologists are qualified.

The blackfly, Simulium, is the vector of onchocerciasis. The disease in Africa is found in all areas south of the Sahara to the border of Bechuanaland at medium altitudes, 1800 to 2500 feet, up to 5000 feet in Ethiopia, Kenya, and the Congo. The patchy distribution of onchocerciasis stems from the habits of the vector, a small fly, which breeds only in running water. It attaches itself to stones or vegetation, laying eggs underwater. Although S. naevei is a common form, another, S. damnosum, has somewhat different habits; it lives only in large rivers. An outstanding characteristic of Simulium—one that makes control difficult—is that it can fly 25 km from its breeding place. Control is, nevertheless, effective in Africa. In Guatemala, however, where most infections occur in mountain coffee plantations, the breeding places of the fly cannot be reached. They are located in the high forest miles from human habitation. That the fly breeds in water leads to the approach of putting an agent noxious to the vector into the streams, but then the fish which the native population are encouraged to eat may die.

Control of onchocerciasis, however, is extremely important, especially in Africa. African nationals have great fear of the disease; they abandon river-side areas in great numbers. These shifts in population not only cause tribal wars, but prevent development of the abandoned region, such as by irrigation projects. Then, too, strangers—such as members of the Peace Corps—are moving into tainted areas. Diagnosis and control of early cases is essential to prevent spreading of the disease. Much work remains to be done!

* * * * *

Leptospirosis

J. Ralph Audy MB PhD, Professor of Tropical Medicine and Human Ecology, Hooper Foundation, University of California Medical Center.

A number of different species, usually called serotypes, of Leptospirae produce leptospirosis in man. Each serotype is responsible for distinctive epidemiologic and clinical effects. At least ten serotypes have been identified

in the United States. In wet countries like Malaya, representatives of practically all known serotypes have been found—more than 26. Each leptospiral infection should take its name from the causative serotype; e. g., canicola leptospirosis, or leptospirosis icterohemorrhagiae.

Leptospiroses, in general, share some rather important features. First, they are more common than has been recognized. Overly taught has been the most violent form of the disease, "Weil's disease," with jaundice, petechial hemorrhages, and a high mortality rate. The clinical picture varies tremendously, ranging from an inapparent infection, a mild disorder such as a day or two of influenza-like symptoms, to a severe form with rapid death. This variability often leads to misdiagnosis. Leptospirosis may be misdiagnosed as meningitis, influenza, dengue, hepatitis, cholecystitis, appendicitis, encephalitis, or fever of unknown origin. In Fort Bragg, N. C., for example, there occurred for 2 or 3 successive years a peculiar fever lasting 4 or 5 days, associated with headache, malaise, and a peculiar erythematous rash on the front of the shins. Called "Fort Bragg" or "pre-tibial" fever, the disease was subsequently shown to have been caused by bataviae leptospirosis—rare in the United States.

Despite the great variety in the clinical pictures of leptospiroses as a whole, however, there is consistency in the manifestations presented in a certain locality. Leptospirosis is commonly described as having a sudden onset, but more than 20% of cases may begin slowly, insidiously, quietly. Careful laboratory study is necessary to distinguish the type of infection involved in a given case. The disease is highly localized, occupational, and usually seasonal. Seasonal incidence may be attributable, in part, to general conditions of wetness, partly to variations in occupations and behavior of exposed people, and partly to the effect of weather on the behavior of animal hosts. In bataviae leptospirosis in Italy, for instance, the animal host is a tiny fieldmouse that goes into the rice fields. But it does not go into the water and infect it with its urine until the rice stalks have grown tall enough to bear its weight and the weight of its nest. In Italy, epidemics, therefore, occur in July. In Spain, by contrast, the same agent causes a dry weather infection. Rats come from the banks of neighboring canals and contaminate the stalks of growing cereal. People become infected at harvest time—a dry time.

The incubation period of leptospirosis is usually one to two weeks but may spread over 3 days to 3 weeks. Onset of clinical symptoms is often, but not necessarily, sudden. Entering through the conjunctivae, oro-nasal mucous membrane, or perhaps, through skin abrasions, the organism spreads throughout the body, tending at first to localize and multiply in the liver, kidneys, and meninges. The lungs are affected at times. Most of the clinical picture develops during the first week, worsening during the second week. If a fatality occurs, it takes place during the second week. Headache is prominent, partly through association with kidney damage and a rising blood urea. Nausea and vomiting are sometimes seen; occasionally, there are external and internal petechiae with blood-stained vomitus. Gastrointestinal and hepatic involvement may simulate appendicitis and cholecystitis. Myalgia is common; a good diagnostic test is to pinch the calf. Conjunctival infection is common,

progressing at times to severe eye involvement, keratitis or iridocyclitis. Jaundice may result from liver involvement. These symptoms and signs characterize classical Weil's disease, icterohemorrhagiae.

The second group of serotypes much less frequently cause jaundice, but are responsible for moderately severe infection. Examples in the United States include autumnalis and Fort Bragg fever due to bataviae. In a third group, infections are usually anicteric and benign. Pomona infection causes meningitis or exaggerated meningism; swineherd's disease is associated with leptospiral meningitis. Canicola infection from dogs, cattle, and pigs belongs to the benign, anicteric group. Some degree of meningism is quite common in leptospirosis, with associated cerebrospinal fluid changes; at times, the picture is that of encephalitis. A rash, at times confusing and varied, may be seen. Bronchitis and bronchopneumonia may cause cough, sometimes productive of blood-stained sputum.

The laboratory diagnosis may depend upon culture, but the procedure is difficult and time-consuming. Agglutination or hemolysin tests are useful, but cross reactions between serotypes necessitate, for exact diagnosis, a whole battery of antigens. Complement fixation is a useful and successful means of diagnosis but is more genus-specific. Convalescence in leptospirosis is protracted, from one or more weeks to several months.

An occupational history should be stressed as a clue to proper diagnosis. Any connection with open water should be investigated, such as bathing, fishing, sewer-inspecting. The risk of infection in Malaya is greatest immediately after a rain which tends to wash rat urine off the side banks into the pools. Harvesters are prone to infection, as are rice and cane growers. Veterinarians, kennel operators, butchers, fish cleaners, poultrymen, miners, road or canal builders, and troops in the field commonly contract leptospirosis.

Treatment consists of penicillin in the early stages of disease, and symptomatic measures thereafter. Particular attention is given to renal complications.

* * * * *

Vector Control

Michel M. Lavoipierre MD, Associate Research Medical Entomologist,
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Although the Romans, having observed that malaria was common in marshy areas, achieved a form of naturalistic control of infection by draining the marshes, substantial advances in vector control awaited the demonstration by Sir Patrick Manson that insect vectors carried disease. When he showed that filariasis was transmitted by mosquitoes, the science of medical entomology was born. In vector control of a given disease, it is important to know what the insect is that transmits the disease, where it is found, and how it behaves.

The main groups of mosquitoes concerned in disease transmission are two, anopheline and culicine. A mosquito is easy to recognize; it is a two-winged fly, diptera, with a very long extension of the head, the proboscis,

in which are the mouth parts driven into the skin when the insect takes a blood meal. A Culex mosquito may be distinguished from Anopheles by examination of the mouth parts. Only the female takes blood. She lays eggs in water—any kind of water except sea water. The eggs of species important in transmitting disease to man are laid on the surface of free water. Larval and pupal stages of development are passed at or near the water surface.

The earliest effort made in the control of insects was directed toward destruction of those places where the immature stages breed. This aim could be easily carried out in domestic situations, as in the case of yellow fever control. The breeding places of species which breed in larger expanses of water could be destroyed by drainage, leveling, and land reclamation.

A little later, larvicides came into use, such as surface oils and Paris green. These measures, on a large scale, are unfortunately prohibitively expensive; furthermore, in many instances, they do not succeed. Maintenance of control, once achieved, is also a problem; larvicides have to be applied constantly. They remain successful, however, on a limited scale.

The next most important step was the space spray, shown to be particularly effective with pyrethrum in South Africa as late as 1935. This success enabled measures against mosquitoes to be increased at a greater pace. Until the time of that success, three agents were successful in mosquito control: stomach poisons, fumigants, and contact poisons. In the first instance, insects swallow the poison; fumigants affect the respiratory system; contact poisons—notably DDT—have, of late, been more widely used.

The most effective contact insecticides include the chlorinated hydrocarbons of which DDT is the best known—the first. This insecticide has a residual effect lasting long periods of time; it is extremely toxic to insects but not to man. Many hydrocarbons have been developed since DDT. Their chief disadvantageous property is being relatively insoluble in water. But they can be applied in the form of watery solutions. First of all, there are water-dispersible pellets consisting of the insecticide in an inner carrier and a wetting agent, finely ground together, which can be applied in a watery form. Next, these substances can also be applied as an emulsifiable concentrate, a solution of the insecticide and a solvent together with an emulsifier. They can also be used as dusts or powders. Chlorinated hydrocarbons may also be used to fortify larvicidal oils for the control of breeding places. In certain instances, little pellets or briquets can be applied to the breeding places of mosquitoes.

Of the types of equipment used in applying these insecticides, the first is the hand spray. Next is the compression pump, the most useful of all the machines. The pump is filled to the three-quarter mark, the handle placed downward, and the insecticide applied by means of a fine nozzle. The device may be carried in a knapsack. Power sprayers, expensive and difficult to move around, can be utilized only in certain situations. They are impractical for tropical use. Of all these devices, the compression sprayer is most often used. Aircraft may be employed for spraying on cleared flat land.

Entomologic surveys are essential to identify the vectors of disease in a particular area. Breeding places and the number of adult forms present

must be studied. Whether the insects enter houses or buildings, the breeding seasons of the vectors—seasons of greatest abundance—and the seasons of transmission of disease are studied. The susceptibility of the vector to DDT or other chlorinated insecticides must be determined. Here, resistance becomes important. Physiologic resistance is dependent upon the detoxifying mechanisms of the insect; behavioral resistance concerns whether an insect irritated by the insecticide will behave in normal fashion. The kinds of surfaces on which insects are found have to be taken into account. On absorbent surfaces, water-dispersible powders must be employed; on nonabsorbent surfaces, emulsions are preferable. In any case, operational costs and availability of equipment must be considered.

The problem of yellow fever is complicated by the fact that it exists in two forms, jungle and rural. Continued vigilance must be exercised to detect the appearance of yellow fever in an inhabited area. Epidemic forms still occur, as in Trinidad in 1954 and in Ethiopia more recently. Under urban conditions, the only important vector is Aedes aegypti. Ridding a community of this mosquito depends on sanitation; the clearing of peridomestic breeding sites is extremely important. Residual spraying with chlorinated hydrocarbons is also useful. The use of insecticides against malarial mosquitoes has, secondarily, reduced the population of Aedes aegypti. Under epidemic conditions, more heroic measures may be needed.

In the case of malaria, eradication of the disease is the aim. The entomologist plays a part in the early stages; thereafter, save for surveillance of areas under observation, the entomologist gives way to those persons in charge of chemotherapy.

Filariasis has, with the exception of W. bancrofti, a jungle reservoir. Control of the disease is exercised in reverse order to that of malaria; i. e., first a program of chemotherapy, then control of insect vectors. The main vector of filariasis, Culex fatigans, has become resistant to insecticides in many areas. In Tahiti, for example, when filariasis in the adult population was first treated, the incidence of microfilariae demonstrated in children dropped in dramatic fashion. Mosquito control must, of course, be undertaken. In the case of Culex pipiens, an urban mosquito, control is not too difficult; the main attack would be directed against insanitation. With many of the other vectors, control is difficult under normal circumstances.

* * * * *

Problems of Malaria Eradication in Africa. Sixteen principal anopheline vectors of malaria are resistant to DDT or dieldrin, or both. These vectors are, however, confined to areas where, at most, there are 50 million people, while in all the malarious areas of the world there are more than 1000 million people. From the standpoint of worldwide malaria eradication, therefore, the problem of mosquito resistance to the chlorinated hydrocarbon insecticides is not of disastrous proportions. Nevertheless, it cannot be ignored and the search for new insecticides is being vigorously pursued with WHO support.

—WHO Chronicle 17(10):375, October 1963

Injurious Consequences of Maximal
Isometric Arm Exercises

William R. Pierson Ph D*, and Philip J. Rasch Ph D**. Journal of
the American Physical Therapy Association 43:582-583, August 1963.

Recently, considerable emphasis has been placed on isometric exercise as a means of maintaining fitness and increasing strength with little expenditure of time or energy. These systems have become so popular that the United States Navy has issued manuals and pamphlets advocating their use (1, 2). These investigations of effects of isometric exercise on isometric strength, however, have led to contradictory results (3). Investigators have reported that some subjects regressed in strength as a result of their practice (4, 5). The authors have observed an association between complaints of arm pain and regression of isometric strength scores. The purpose of this study was to determine the incidence of injury and changes in muscular strength resulting from a program of twice daily maximal isometric exercise for the elbow flexor muscles.

Fifteen upper-class students of the California College of Medicine were tested for isometric strength of the forearm flexor muscles by means of a short bar connected to a strain gauge. Each subject exerted a maximal pull against the bar twice a day, 5 days a week for 2 weeks. The exercise resulted in severe arm and forearm pains for eleven of the fifteen subjects — five in the nondominant arm, four in the dominant arm, one in both arms, and one in the nondominant wrist. The symptoms were described as similar to "shin-splints" in the ulnar aspect of the forearm by ten subjects and as a "sharp" pain in the area of the origin of the triceps brachii by one. In all instances, the injury was noticed immediately following the maximal exertion recorded for that subject. The incidence of injury did not appear to be related to initial strength.

Noninjured subjects had a statistically significant increase in mean isometric strength as a result of the practice of these exercises; the injured subjects did not.

Careful questioning of subjects with pain revealed that in ten the injury apparently was of the flexor carpi ulnaris muscle. Normally, when an individual flexes the forearm against an immovable bar, the wrists drop into a position of hyperextension in an attempt to relieve stress created in the wrist flexors as the powerful elbow flexors seek to produce a concentric contraction of the forearms. In this investigation, subjects were required to maintain the wrists in line with the forearms in order to insure that contraction was as fully isometric as was mechanically possible. Presumably, the resulting strain on the wrist flexors became intolerable and resulted in physical damage to some of the weaker fibers of the flexor carpi ulnaris.

Results of this study suggest precaution in prescribing maximal biometric forearm flexion exercise for healthy adult males. (References on p. 14)

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Naval Medical Field Research Laboratory, Camp Lejeune, N. C.

Isometric Arm Exercises (Continued)

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MISCELLANY

Symposium on Biomedical Effects of Nuclear Weapons

The Allied Countries, Atlantic (ACLANT), Medical Conference convened at the Headquarters of the Supreme Allied Commander, Atlantic, in Norfolk, Va., on 23 October 1963. Medical officer representatives from Canada, Denmark, France, The Netherlands, Norway, The United Kingdom, and the United States attended. The delegates were, in most cases, the Medical Directors, General of their respective navies. In addition, members of the NATO Medical Committee participated. In general, representatives on the NATO Medical Committee are the Ministers of Health in their respective countries.

As part of their visit to the United States, the Surgeon General of the Navy, Rear Admiral E. C. Kenney, requested both the Chief, Defense Atomic Support Agency and the Commanding Officer, U. S. Naval Medical Research Institute, NNMC, to co-sponsor a 3-day symposium on Biomedical Effects of Nuclear Weapons. This was arranged, and the symposium convened in the auditorium of the U. S. Naval Medical Research Institute on Tuesday, the 29th of October and adjourned on Friday, 1 November. However, the visitors spent Monday, the 28th, at the Experimental Diving Unit and Diving School at the Navy Yard Annex, U. S. Naval Station, Washington, D. C., for an excellent briefing on current programs. The capable and experienced speakers covered a wide range of subjects in this eminently productive symposium.

Biological Sciences Workshop

A Navy-wide Workshop in Biological Sciences Research was held at the Naval Medical Research Institute, NNMC, Bethesda, Md., 14 - 18 October 1963. This meeting represented a "first" in tangible efforts to improve communications among staffs of Naval laboratories engaged in biological disciplines.

The theme, Knowledgeable Fellowship Among Naval Activities Interested in Biological Sciences, was set in opening remarks by Dr. Roger D. Reid, Director, Biological Sciences Division, ONR, and instigator of the Workshop. Welcomes were extended by RADM Calvin B. Galloway MC USN, Commanding Officer, NNMC, and by RADM Walter Welham MC USN, Assistant Chief for Research and Military Medical Specialties, Bureau of Medicine and Surgery. RADM Leonidas D. Coates USN, Chief of Naval Research, commented on the role of ONR in coordination of Naval research and development. Biological interests of twenty-seven Naval activities were presented by senior staff officers and technical members. More than 85 persons attended the meetings; they discussed such diverse subjects as stress physiology, biochemical and physical aspects of traumatic injury, chemical and biological warfare, hydrobiology, and microbiology.

The final session was devoted to generalizations on biological research, and to evaluation of this type of meeting as a means of considering the needs of the Navy in this area. The response reflected widespread interest in scheduling such a symposium each year for exchange of information.

Appreciation was expressed to CAPT J. R. Seal MC USN, Commanding Officer of NMRI, and to the members of his staff who were hosts for the 1961 Workshop.

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Reminder to Prospective Medical Officer Volunteers for Antarctic Research Program

The U. S. Navy has the annual task of supporting a long-range scientific operation in Antarctica which is under the auspices of the National Science Foundation. Plans are now being formulated for next year's operation which will be known as the U. S. Antarctic Research Program.

During the operation, the Navy will support five bases in Antarctica (Pole, Byrd, McMurdo Sound, Cape Hallett, and Eights Station) with a medical officer at each of the first four bases (Flight Surgeon at McMurdo Air Facility). Personnel at these bases will vary from 15 to 100 men, including 3 to 15 civilian scientists who will investigate not only earth sciences, such as weather, geology, seismology, and glaciology, but also the biological and medical sciences. Antarctic doctors are invited and encouraged during their tour of duty to study the medical problems of isolation, acclimatization, and cold weather physiology.

Special training for medical officers will be given at the Construction Battalion Center, Davisville, Rhode Island, in orthopedics, general surgery,

anesthesiology, EENT, psychiatry, emergency dental care, cold weather medicine, hygiene and sanitation, and survival in the polar regions.

In the fall of 1964, after training has been completed, the party will embark for Christchurch, New Zealand and then to Antarctica. Individuals will remain at their respective bases in Antarctica until November or December 1965 when they will return to the Continental United States for re-assignment, usually to a duty station of their choice from among available billets. Assignment to this operation is available to qualified medical officers on active duty or inactive duty. Further information concerning how you can volunteer can be obtained by contacting BuMed, Attn: Code 31.

FROM THE NOTE BOOK

Control of Defense Documentation Center

The Department of Defense has announced that the Defense Documentation Center (DDC) for Scientific and Technical Information was transferred from operational control of the Air Force to the Defense Supply Agency (DSA) on 1 November 1963. This move is part of DOD's rapidly developing technical information program. It is designed to provide a direct channel of communication with which DDC can provide its DOD-wide document services.

DDC was known as the Armed Services Technical Information Agency (ASTIA) before it was renamed last March. The primary mission of DDC is to acquire, store, and announce all technical reports prepared as the result of defense research, development, test, and evaluation activities which now total approximately \$7 billion annually. DDC also provides copies of these reports to the defense community at no charge; reports with no security or proprietary restrictions are released for public sale by the Office of Technical Services in the Department of Commerce. Additional services include provision of bibliographic searches and maintenance of a file on current R&D effort in DOD.

DDC's mission is not specific to any single branch of the Military Departments, and the decision to place the center under the Defense Supply Agency reflects a DOD desire to insure that DDC can provide its full range of services equally to all DOD components using its services.

—DOD, Office of Public Affairs, 15 October 1963

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SPECIAL NOTICE: Medical Technician Specialty Courses of the Hospital Corps, U.S. Navy, 1963 - 1964.

Following is a listing of medical technician specialty courses which indicate current course lengths and obligated service requirements in accordance with memorandum correction No. 8 of 21 August 1963.

—Director, Hospital Corps Division, BuMed

Medical Technician Specialty Courses - HC USN

NEC	MED ABBREV	BUPERS CODE	TITLE	LENGTH COI	OBLI-SERV
8403	SUB	CHSS	SUBMARINE MEDICINE TECHNIC	20 Wks	24 Mos
8405	AGS	BHM	ADVANCED HOSPITAL CORPS TECHNIC	20 Wks	24 Mos
8406	AVT	CHAV	AVIATION MEDICINE TECHNIC	16 Wks	24 Mos
8407	NMS	CHNM	NUCLEAR MEDICINE TECHNIC	12 Wks	18 Mos
8408	CPT	CHCP	CARDIOPULMONARY TECHNIC	39 Wks	42 Mos
8409	APT	CHAP	AVIATION PHYSIOLOGY TECHNIC	16 Wks	24 Mos
8412	LBA	CHLA	CLINICAL LABORATORY ASSISTANT TECHNIC	12 Wks	18 Mos
8413	TCT	CHTC	TISSUE CULTURE TECHNIC	16 Wks	24 Mos
8414	CHT	CHCT	CLINICAL CHEMISTRY TECHNIC	12 Wks	18 Mos
8416	RIT	CHRI	RADIOACTIVE ISOTOPE TECHNIC	24 Wks	30 Mos
8417	LBT	CHCL	CLINICAL LABORATORY TECHNIC	60 Wks	48 Mos
8418	TBT	CHTB	TISSUE BANK TECHNIC	26 Wks	30 Mos
8432	PVT	CHES	PREVENTIVE MEDICINE TECHNIC	21 Wks	30 Mos
8442	MAT	CHAX	MEDICAL ADMINISTRATIVE TECHNIC	30 Wks	36 Mos
8444	NPC	CHNC	NEUROPSYCHIATRY CLERICAL TECHNIC	16 Wks	24 Mos
8452	XRT	CHXT	X-RAY TECHNIC	52 Wks	48 Mos
8453	ELT	CHEL	ELECTROCARDIOGRAPH & BASAL METABOLISM TECHNIC	16 Wks	24 Mos
8454	ENC	CHEE	ELECTROENCEPHALOGRAPHY TECHNIC	16 Wks	24 Mos
8462	OPG	CHOG	OPTICIAN GENERAL TECHNIC	24 Wks	30 Mos
8463	OPL	CHOL	OPTICIAN LABORATORY TECHNIC	7 Wks	18 Mos
8472	PMT	CHMP	MEDICAL PHOTOGRAPHY TECHNIC	26 Wks	30 Mos
8482	PCT	CHPT	PHARMACY TECHNIC	32 Wks	36 Mos
8483	ORT	CHOP	OPERATING ROOM TECHNIC	26 Wks	30 Mos
8484	ENT	CHET	EYE, EAR, NOSE & THROAT TECHNIC	26 Wks	30 Mos
8485	NPT	CHNT	NEUROPSYCHIATRY TECHNIC	16 Wks	24 Mos
8486	URT	CHUR	UROLOGICAL TECHNIC	26 Wks	30 Mos
8487	OTT	CHOT	OCCUPATIONAL THERAPY TECHNIC	26 Wks	30 Mos
8488	OAM	CHOA	ORTHOPEDIC APPLIANCE TECHNIC	52 Wks	48 Mos
8493	DIV	CHDD	MEDICAL DEEP SEA DIVING TECHNIC	26 Wks	30 Mos
8494	PHT	CHPS	PHYSICAL THERAPY TECHNIC	26 Wks	30 Mos
8495	DST	CHDT	DERMATOLOGY TECHNIC	16 Wks	24 Mos
8497	MIT	CHMI	MEDICAL ILLUSTRATION TECHNIC	26 Wks	30 Mos
8498	MRM	CHER	MEDICAL EQUIPMENT REPAIR TECHNIC	40 Wks	42 Mos

8492 SOT SPECIAL OPERATIONS TECHNIC (FLEET FUNCTIONAL TRNG)

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Composition and Function of the Medical Service Corps

"Medical Service Corps officers serve throughout the Naval Establishment in support of all phases of Medical Department operations. Scientists of the corps are making significant contributions in medical research and preventive medicine programs. Supply and Administration officers perform a multiplicity of administrative tasks. Pharmacists, optometrists, podiatrists, dietitians, physical therapists, and occupational therapists have also earned recognition throughout the Medical Department of the Navy.

It is my conviction that eligible persons will find the Medical Service Corps a stimulating, challenging, and rewarding career."

/s/ E. C. KENNEY
Rear Admiral MC USN
Surgeon General

MEDICAL ALLIED SCIENCES SECTION

Bacteriologist	Pharmacologist	Psychologist-Exptl.
Biochemist	Physicist	Radiobiologist
Chemist	Hematologist	Radiochemist
Biophysicist	Microbiologist	Radiophysicist
Public Health Officer	Physiologist	Parasitologist
Entomologist	Psychologist -	Serologist
Industrial Hygienist	Clinical	Virologist

WOMEN'S SPECIALISTS SECTION

Dietician	Physical Therapist	Occupational Ther.
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OPTOMETRY SECTION

PODIATRY SECTION

PHARMACY SECTION

SUPPLY AND ADMINISTRATION

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Hospital Corps Notice - Title Change for HM-8432

The Navy Enlisted Classification Code, Hospital Corpsman, Environmental Sanitation Technician, HM-8432, is being revised to Hospital Corpsman, Preventive Medicine Technician, HM-8432.

The present title has become too limiting to clearly define training received and duties performed. The revised title is considered to better portray the capabilities and functions of trained personnel, and to assist in obtaining maximum utilization through appropriate designation. The revised title, Hospital Corpsman, Preventive Medicine Technician, HM-8432, will appear in the next regularly scheduled revision of current directives and the Manual of Navy Enlisted Classifications.

—Director, Hospital Corps Division, BuMed

SUBMARINE MEDICINE SECTION



MAJOR CHANGES IN THE SUBMARINE MEDICINE PROGRAM

Submarine Medicine is the military medical specialty which supports all underwater operations in the Navy. This includes providing medical services to the crews of all submarines, deep sea divers and underwater swimmers. In general terms, the practice of submarine medicine can be considered a combination of general practice and of occupational medicine.

All of the underwater services in the Navy are volunteer organizations. Submarine Medicine, therefore, provides a unique opportunity to work with a highly motivated and specially trained group of volunteers. Medical officers feel that their professional careers have been enhanced, and their personal lives greatly enriched, through their experiences and associations in the submarine service.

Although the submarine medicine organization is a small one, the program is experiencing a rapid growth at this time. There are presently 86 billets for submarine medical officers; but within the next 2 years approximately 120 medical officers will be required in the program. Since the organization is relatively small, it is possible in most instances to give consideration to the desires and capabilities of each individual in making duty assignments.

The Navy's highest priority program is the Fleet Ballistic Missile, or POLARIS, program. At present there are 14 of these ships in commission and 27 under construction or authorized by the senate. Each of these submarines has two complete crews known as "Blue" and "Gold." While one crew is on patrol with the submarine, the other crew remains ashore for refresher training and leave. Due to the mission of these submarines and the nature of the patrols, a medical officer is assigned to each crew. Since the POLARIS submarine program creates the greatest demand for medical officers, every submarine medical officer can anticipate spending some time as a member of a POLARIS submarine crew.

Each new nuclear submarine brings with it special medical problems. A specially trained medical officer is assigned to the precommissioning crew of these submarines for a period of about 12 months. To qualify for this duty, the medical officer receives 12 weeks of special instruction at an Atomic Energy Commission Reactor Site located at either Arco, Idaho, or West Milton, New York. During the second month of basic submarine training, each medical officer will be given an opportunity to state his desires concerning this special training. For those indicating a desire for this special training, an interview will be arranged with the selection board, Navy Reactors Branch, in Washington, D.C., for consideration. If selected by this board, the Reactor Site training will commence immediately following the basic submarine course. Normally, between 15 and 20 medical officers are selected each year for this special training. Nuclear submarines are being built at Portsmouth, N.H.; New London, Conn.; Camden, New Jersey; Newport News, Virginia; Pascagoula, Miss.; and Mare Island (Vallejo), California.

A certain number of medical officers can anticipate serving from 12 to 18 months as Squadron Medical Officers. In this capacity the medical officer has overall responsibility for the medical care of approximately 2000 officers and men. The squadron includes a submarine tender, containing a wide variety of industrial repair facilities, and a 35-bed hospital. The squadron also includes a diving ship; therefore, the medical officer is responsible for medical supervision of the divers. Submarine squadrons are located at New London, Conn.; Norfolk, Va.; Charleston, S.C.; Key West, Fla.; San Diego, Calif.; and Pearl Harbor, Hawaii.

Service in submarine medicine also offers specific opportunity for those interested in research and teaching assignments. The U. S. Naval Medical Research Laboratory, Submarine Base, New London, Conn., is the home of Submarine Medicine. Research in all phases of submarine medicine is carried on at this Laboratory. Of greatest importance are the research programs in respiratory physiology and in assessment of personnel for submarine duty. Medical officers assigned to the Laboratory also have additional duty at the Submarine Escape Training Tank.

The foremost center for training in deep sea diving and for research in underwater physiology is located in Washington, D.C. Two activities—the Naval School, Deep Sea Divers, and the Naval Experimental Unit—occupy a single building at the Naval Weapons Plant. Medical officers assigned to these activities work together in teaching the medical aspects of diving in conducting research in underwater physiology. Submarine research billets are also located at the Naval Medical Research Institute and the Armed Forces Radiobiology Research Institute at Bethesda, Maryland.

Another assignment in submarine medicine is duty on the staff of the Naval School, Underwater Swimmers, Key West, Florida. This school is the "SCUBA College" of the Navy. Here the medical officer participates in the training program, and also provides medical care for the staff, students, and their dependents. Submarine medical officers also serve with Underwater Demolition teams. This duty is similar to that at the Underwater Swimmers School. At present, teams are located on each coast.

The training course in submarine medicine is conducted at the U. S. Naval Submarine and Diving School at New London, Conn. Commencing in August 1964, the six months' course will convene twice yearly—in the late summer and winter. The curriculum includes Basic Submarine Training, Underwater Physiology, Submarine Medicine, Radiobiology, and underway periods for submarine and diving familiarization and orientation. Medical officers are required to perform deep sea dives during this period.

Graduates of the training course are eligible to wear the Submarine Medicine insignia after they have been designated as "Qualified Submarine Medical Officers." To achieve qualification, they must practice this specialty for one year, prepare an acceptable thesis, and pass a comprehensive examination.

Graduates of the training course applying for postgraduate or residency training in internal medicine, occupational medicine, public health, radiobiology and research are credited with this training as part of their requirement for certification. Advanced courses in diving medicine are available at the University of Pennsylvania and the University of Buffalo. Clinical medical specialty training in all fields is available to submarine medical officers on an equal basis with other medical officers. In many instances their submarine duty enhances their possibility of selection for specialty training.

Medical officers assigned to duty on board a submarine or attached to a submarine squadron are entitled to receive submarine pay, in addition to all

other compensation. The amount of submarine pay received varies with rank and time in service. The details of this are given in the following table:

<u>Rank</u>	<u>Cumulative Years of Service</u>			
	Over <u>4</u>	Over <u>6</u>	Over <u>8</u>	Over <u>10</u>
Lieutenant	\$165	\$180	\$185	\$190
Lieutenant Commander	185	185	195	210

Therefore, a submarine medical officer in the grade of lieutenant with dependents, and with more than 4 years' service for pay purposes, receives a monthly income of \$962.93. Medical officers attached to the Submarine Escape Training Tanks, the Naval School, Deep Sea Divers, Experimental Diving Unit, UDT's, and Underwater Swimmers School receive extra compensation at the rate of \$110 per month. Such an officer, with dependents and more than 4 years' service for pay purposes, receives a monthly income of \$907.93.

The obligated service requirement for attending this course is an agreement to remain on active duty for 18 months following completion of training, or six months beyond any current obligation, whichever is longer.

SUBMISSION OF APPLICATIONS: Applications for assignment to the course of instruction in Submarine Medicine should be made by means of an official letter addressed to Chief, Bureau of Medicine and Surgery and forwarded via the chain of command, stating the commencement date desired, and contain the obligated service agreement which in substance states that you agree to serve on active duty for 18 months following completion of the training course, or six months beyond your current obligated service, whichever is longer. The training in submarine and diving medicine, and the training in Radiobiology and Nuclear Physics, are creditable toward board certification in internal medicine, and also by the American Board of Preventive Medicine in the subspecialty of Occupational Medicine.

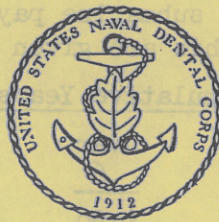
In essence, the major changes in the program are:

1. All training (except reactor site) will be conducted at U. S. Naval Submarine Base, New London, Connecticut.
2. Reduce the total obligated service required for most medical officers from 33 months to 24 months.
3. Reduce the training program by 3 months.
4. Allow the medical officer to grasp a picture of the total program prior to determining his desires concerning Nuclear Reactor Site training.

Advantages of these changes to the medical officer:

1. Less separation for married personnel from their families during basic training period.
2. Commencement of postgraduate or residency training 9 months prior to that previously allowed.
3. Less personal cost involved by eliminating the temporary duty at Naval School for Deep Sea Divers.

If you desire further information regarding the Submarine Medicine Program, address inquiries to Commander John H. Schulte, MC, USN, Director, Submarine Medicine Division, Bureau of Medicine and Surgery, Navy Department, 2300 E St., N.W., Washington 25, D. C.

DENTAL**SECTION**

A Philosophy of Partial Denture Treatment

By William L. McCracken, DDS., MS., University of Alabama, School of Dentistry, Birmingham, Ala. *Journal of Prosthetic Dentistry* 13(5): 889-900, Sept.-Oct. 1963.

Fewer teeth are being lost because of the progress being made in the prevention and treatment of caries and periodontal disease, and in the treatment of nonvital teeth. The result of this conservation of teeth will be an increased demand for tooth supported partial dentures, both fixed and removable.

The modern concept of oral rehabilitation by means of removable partial dentures is closely tied to reconstruction by fixed means, and in most partially edentulous mouths, some fixed reconstruction is necessary to provide support, retention, and stabilization for the removable part of the total restoration.

Partial dentures are effective instruments in long-lasting oral rehabilitation. When considered in this manner rather than a device for a temporary solution of an edentulous problem, the partial denture becomes an integral part of the overall treatment. Within this concept of increased need for long-range rehabilitation by partial dentures, Dr. McCracken presents a complete picture for diagnosis, treatment, planning, and execution of technics.

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Some Conditions Affecting the Dental Profession

By Frank M. Lott, CBE, DDS, MScD, PhD, University of Southern California, School of Dentistry, Los Angeles, Calif. *J Pros Dent* 13(5): 987-992, Sept. - Oct. 1963.

In publishing this address on "Some Conditions Affecting the Dental Profession" by Dr. Lott before the Academy of Denture Prosthetics, *The Journal of Prosthetic Dentistry* has focused attention on a well presented discussion of the Dental Profession. Dr. Lott presents background material for the present status of the profession, then poses a challenge as well as a course of action required for continued growth on a State, Federal or combined basis.

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Total Extraction for Immediate Dentures Under
Local Anesthesia Supplemented by Intravenous Tranquilizers

Roger G. Gerry, D.M.D.*, and Charles W. Miller, D.D.S.**, St. Albans, L. I., N. Y. The Journal of Oral Surgery, Anesthesia, and Hospital Dental Service 21(5): 400-409, Sept. 1963.

The technic in which all the remaining teeth are removed, other indicated oral surgery accomplished, with immediate insertion of previously prepared dentures, has been known and reported for years. It has not been generally accepted probably because most authors have expressed reservations concerning the feasibility of using it in the treatment of some chronically ill patients.

Since there is a correlation between the age of patients requiring multiple extractions and the age at which many of the contraindicating diseases are prevalent, many who might be eligible for total extraction and immediate denture replacement were considered disqualified by virtue of concurrent systemic disease. After considering the advantages offered those patients who could be hospitalized, if not already in-patients, it was decided that this might be the treatment of choice. The advantages offered were: one exodontic episode, adequate pre-medication, intravenous included; and the use of treatment dentures at an earlier post-extraction date with less interference in nutrition.

Records were kept for three years in which all chronically ill patients who required extraction of all remaining teeth were treated in this manner.

The complete article presents the surgical and prosthodontic technics used and discusses the advantages observed in the 66 cases who received this treatment.

* Captain, Dental Corps, U. S. Navy, Chief of Dental Service, U. S. Naval Hospital, St. Albans, N. Y.

** Captain, Dental Corps, U. S. Navy, USNH, St. Albans, N. Y.

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Personnel and Professional Notes

New Training Films in Dentistry. Two new color films in different areas of training in dentistry have recently been approved by the Bureau and are now being distributed.

The first, "Removable Partial Dentures: The Wax-Up" (MN-9666), is a fourteen-minute film showing the steps by which a technician develops the wax-up for a partial denture casting from the plain refractory cast: placing a basic sheet of wax for foundation; laying down a strip for reinforcement; placing a strip for the finish line; constructing the retentive framework for the denture base; placing clasps; waxing occlusal rests; and covering the completed basic

framework with sheet wax to cover irregularities and produce a smooth metal casting.

The second film, "The Dental Assistant, Outpatient Oral Surgery" (MN-9692), is nineteen minutes long and illustrates the functions of both scrub and circulating assistants to the oral surgeon in outpatient service. The principal sequences show care of the operatory, sterilization of equipment and supplies, maintenance of asepsis, management of the patient and, of course, performance of duties by both assistants during the surgical procedure. The film emphasizes the point that each technician must learn to serve equally well as either scrub or circulating assistant. In both form and purpose this film is similar to "The Dental Assistant, Operative" (MN-8913), released early last year, which showed the duties of the single technician acting as assistant in operative dentistry.

Prints of both films reviewed above are being distributed to District libraries and to other installations in the United States and overseas where the subjects are of particular interest. If prints are not available from your usual source, please address inquiry to the Commanding Officer, Naval Photographic Center, Naval Station, Washington, D. C., Attention Film Distribution Division.

Treasure Island Hosts Area Dentists. The Dental Department at the Treasure Island Naval Station served as host for 115 dentists at the initial meeting of the Bay Area Armed Forces Dental Study Group for the year 1963-64. The meeting was held on September 10 and was presided over by Colonel S. Kingdon Avery, who is an Army dental surgeon at the Presidio, San Francisco. Composed of dental officers of the Army, Navy, Air Force, Coast Guard, and Public Health Service, the group was originally organized in order that its members might benefit from the wealth of available professional talent, both civilian and military in the area. Regular participation by the dental officers of the armed services has brought about a most beneficial exchange of ideas and has fostered excellent inter-service relations.

Guest speaker for the occasion was Dr. Frank Pavel, an outstanding and well known oral surgeon of San Diego, California. His lecture, "Management of Common Oral Surgical Problems," was extremely well received. Dr. Pavel, a former Naval dental officer, directed his presentation to the new dental officer in the armed services. He presented practical methods for handling various types of patient problems that are apt to confront the young dental officer ashore, afloat or on independent duty. He supplemented his talk with a comprehensive set of kodachrome slides which illustrated the cases described.

Lieutenant Colonel Milbourn DC USAF, from Hamilton Air Force Base, California, was elected Secretary-Treasurer of the Study Group for the coming year. A "Well Done" was expressed to CDR Ben C. Sharp DC USN, the outgoing Secretary-Treasurer. Program chairman for the meeting was CAPT James J. Dempsey DC USN, Senior Dental Officer of the Naval Station.

Camp Lejeune Dental Society Meetings. The Camp Lejeune Dental Society held their first meeting of the 1963-64 season on Sunday, September 29th 1963. The Base Dental Department, Camp Lejeune hosted the affair which was a get acquainted "Tea Dance."

The second meeting, held on 24 October 1963 was sponsored by the Second Dental Company, Camp Lejeune. CDR L. A. Benson DC USN presented an illustrated lecture entitled, "Technique for a Simple Gingivectomy." CDR Benson, presently on duty with the Second Dental Company, is an Associate Member of the American Academy of Periodontology. Approximately fifty-five dental officers were in attendance from the Camp Lejeune-Cherry Point areas.

Newly Standardized Items Available for Issue.

<u>FSN</u>	<u>Nomenclature</u>	<u>Unit</u>	<u>Price</u>
L6520-890-1305	Sealing Compound, Pulp Canal, Dental	PG	\$ 3.20
L6520-890-1354	Lead, Marking, Dental Surveyor	PG	.73
L6520-893-8486	Lubricant, Pattern, Dental, 3 oz	BT	.69
L6850-857-8350	Corrosion Removing Compound, Dry	BT	.61
L8540-082-6606	Towel, Paper, Plastic Coated on One Side, Disposable, Dental	PG	1.50

U. S. Navy Dental Corps Continuing Training Program. Recognizing the need for a continuing education program to keep Dental officers of the Navy abreast of the latest developments in dentistry and keyed to a high professional level, the U. S. Naval Dental Corps is offering a series of short postgraduate courses conducted by members of the staff of the U. S. Naval Dental School, Washington, D. C.

"Complete Dentures" will be offered 10-14 February 1964. This course covers the procedures involved in complete denture prosthetics. Emphasis is placed on the physiology of oral tissues, impression considerations, maxillo-mandibular relationship records, remounting procedures, and occlusal correction. The class participates in natural-contour waxing procedures and in the equilibration of dentures.

Quotas for the course have been assigned to ComOne, ComThree, ComFour, ComFive, ComSix, ComNine, PRNC, SRNC, CNATRA. These short courses are open to active duty career Dental officers of the Armed Forces in accordance with these quotas established by the Bureau of Medicine and Surgery.

The Bureau Professional Advisory Board will make recommendations on all requests, and upon approval by the Surgeon General, applicants will be notified regarding final action. Those approved will be nominated for TAD or authorization orders, as appropriate. Staff Dental Officers not utilizing assigned quotas must report this information to BUMED, Code 6111, at least 4 weeks prior to the convening date of the course.

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PREVENTIVE MEDICINE

O'nyong-Nyong - Joint Ache Fever New Threat in Africa

World Health Magazine of WHO pps 27-28, May 1963

In the first half of 1959 a great epidemic swept through Uganda, starting in the northwest of the country and spreading swiftly southeast into Kenya, crossing into what was then the Belgian Congo, and probably also invading the Sudan to the north. The infection carried in the epidemic was like dengue, a disease found in many parts of the world, which gives its victims a severe headache, eyeache, and pains all over the body.

O'nyong-nyong fever begins suddenly with a high temperature and often an attack of shivering. The joints start to ache; the knee joints particularly, but also, though to a lesser extent, the elbows, the wrists, the fingers and ankles. The pain in the joints varies in intensity. Some people were only slightly stiff while others were in excruciating agony. The very ill patients in the epidemic could neither sit nor stand, and even those only slightly ill found standing difficult. The joint pains gave the disease its name: in the language of one of the tribes that first went down with it o'nyong-nyong means joint-weakening.

As well as pains and aches in the joints there is usually headache, varying from moderate to severe, and pain in and behind the eyes. Often there is a discharge from the eyes, the eyeballs are tender, the eyelids swollen, and some people complain that the light hurts their eyes. On or about the fourth day of the disease a rash appears, just like the rash of measles except that it is extremely itchy.

All recovered from o'nyong-nyong fever in the epidemic, though some people were slow in convalescing, suffering from pains in the joints, depression, and weakness for some time.

Most of the people who caught the disease were Africans. The Europeans and Asians were hardly touched; out of the million or so people who had the disease, only 3 were Europeans, 2 of them mission sisters. One doctor suggested that the reason for the greater immunity of Europeans was the fewer insects to be found in their houses.

When o'nyong-nyong fever became an epidemic, it was at once suspected of being a virus disease. Dengue, with so many features in common, was inevitably the first suspect, for, though it is most common in seacoast areas, it does occur inland. On the other hand, in dengue the temperature usually rises

higher than it did in this epidemic, and it also falls and rises again to form what is known as a saddleback temperature. This does not happen in o'nyong-nyong fever.

When the East African Virus Research Institute heard of the disease in June, 1959, it thought that it was chikungunya fever, a virus disease first reported in 1955, also in East Africa. Chikungunya fever has symptoms very similar to those of o'nyong-nyong fever, but it has a saddleback temperature rather like that of dengue, the heart rate slows down greatly during the course of the illness, and—a very important point—the glands are not swollen. In o'nyong-nyong fever the heart rate does not slow down and the glands do swell, often to a marked degree. Chikungunya fever affects both sexes and Europeans, Asians and Africans equally.

Once the epidemic was well under way and recognized, the diagnosis of the disease as o'nyong-nyong fever was easy enough. Before then it often was diagnosed as other diseases. Before the rash appeared, it was thought at times to be malaria. In o'nyong-nyong fever, however, the pain is felt chiefly in the joints, whereas in malaria it is felt vaguely all over the body as a generalized ache; the glands have no marked swelling in malaria; and, of course, a blood slide of malaria shows the parasites. Once the rash appeared, diseases with a similar rash like measles and rubella were suspected. In measles the rash is not itchy, the patient has what seems to be a streaming cold, and usually there are no pains in the joints; while rubella is as a rule a mild disease with a non-itchy rash and, as in measles, joints are free of aches and pains.

Chikungunya fever is caused by a virus carried mainly by the mosquito Aedes aegypti, which is also one of the main carriers of dengue. The mosquito bites an infected person, swallows some of the virus and transmits it to an uninfected person it bites later; the virus multiplies in the blood stream of the person bitten, and when it has developed to a certain extent, symptoms of the disease begin. Mosquitoes like Aedes are known to carry many different viruses; and as Aedes aegypti is found in parts of East Africa where the epidemic took place, it was natural to suspect it of being the carrier of the disease-causing virus. But the epidemic spread over varied regions in which Aedes aegypti was very scarce, and was unlikely to be the carrier. The speed with which the epidemic spread excluded the local bed bug, as well as lice and fleas; and the limited extent of the epidemic also ruled out the bed bug, which is found over far greater areas of that part of East Africa.

By a process of exclusion the search was narrowed down to the mosquitoes Anopheles gambiae and Anopheles funestus, which both carry malaria in East Africa. When chikungunya virus was being sought, it was actually found occasionally in these 2 species of mosquito, but they did not infect man. Anopheles gambiae is found over a wide area throughout equatorial Africa, whereas Anopheles funestus, although almost equally widespread, tends to be found in more circumscribed areas that correspond largely with that of the epidemic. It was therefore suspected that Anopheles funestus was the carrier, and this was proved to be so by isolation of the virus from the mosquito.

The virus was also isolated from the blood of convalescent patients. The techniques used in isolating chikungunya virus were used, but whereas the chikungunya virus is easy to isolate, the o'nyong-nyong virus is not—another distinguishing characteristic in the diagnosis of the disease. It is nevertheless closely related to chikungunya virus, as is shown by the fact that the blood of people collected shortly after the epidemic had a high level of antibodies not only against o'nyong-nyong virus but also against chikungunya virus. This study of blood taken after the epidemic also showed that people who had had no symptoms had nevertheless contracted the disease in a mild, unnoticed form. Nearly 90% of the people in the epidemic area had been infected.

Viruses have been isolated from Anopheles mosquitoes on a few occasions in the past, but this is the first time that these formidable carriers of malaria have ever been shown to transmit a virus disease.

Another interesting point is the effect on malaria. Around Rakai, in Uganda, malaria is highly endemic. In May 1960, it was found that the amount of malaria in the area had suddenly dropped, just at a time when the season and the abundance of mosquitoes would normally have led to an increase. The mosquitoes that usually transmitted malaria were examined to find out the reason for this unusual state of affairs, and it was found that they were harboring fewer malaria parasites than usual, but were instead harboring o'nyong-nyong virus. In June, a large number of cases of o'nyong-nyong fever occurred in the area, the epidemic waning in July. It would appear from this that the o'nyong-nyong virus in some way slows down or stops the development of the malaria parasite within the human host; or alternatively, that it affects the transmission of malaria by shortening the life of the mosquito.

Why have the Anopheles mosquitoes suddenly become infected with virus? It has been suggested that the reason may be the malaria eradication program in this part of Africa, the argument being that the mosquitoes have been driven away from their normal hosts and have instead attacked some animal or animals which they do not normally attack and which have infected them with o'nyong-nyong virus. This is only a speculation, but an interesting one. Against it is to be placed the relative immunity of the oldest age group of the population affected by the epidemic. An epidemic of an unknown disease occurred in the Sudan and in Uganda in 1905-1906, and it appears from the surviving accounts to have been very like o'nyong-nyong fever. That it in fact was o'nyong-nyong may be suspected from the comparative immunity of the older people, who may be immune because they caught the disease then and still carry antibodies to it today. But 1905 was long before the era of malaria eradication programs.

The World Health Organization is supporting research into the relation between o'nyong-nyong and malaria.

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Botulism

DHEW PHS Morbidity and Mortality Wkly Rpts 12(38, 39, 40, 41); 27 September, 4, 11, and 18 October 1963.

West Virginia. A 25-year old man died of botulism within 24 hours after eating home canned green beans. Six hours after ingestion, the patient experienced severe abdominal cramping and vomiting, which caused his admission to a hospital. At that time, his pupils were noted to be dilated and fixed. In the hospital his vomiting continued; he went into shock, and expired early the next morning. At autopsy, the stomach and small bowel were dilated, but otherwise there was no evidence of gastrointestinal pathology. The lungs were markedly edematous and congested. The brain was mildly edematous.

The victim's wife had prepared 6 quarts of cold pack green beans, obtained from the family garden in early July 1963. Five quarts were consumed by all members of the family (including the victim) at varying intervals during July. No member of the family experienced illness after eating from these 5 quarts. The remaining quart, opened approximately one month after it was cold packed, was noted to have both a milky appearance and a bad odor. The patient disregarded advice from other members of the family and consumed approximately one-half the can of beans. No other member of the family tasted the beans from this particular can.

Clostridium botulinum was cultured from the remaining green beans. This is the first known case of botulism from West Virginia.

Kentucky. Five cases of botulism, including one death, were reported from Kentucky for the week ending September 28, 1963.

Five members of a Mayslick, Kentucky, family of 10 became ill with symptoms characteristic of botulism following a Saturday night supper which consisted of home preserved corn. On September 14, the mother opened a quart sized jar of the corn, which she had cold packed approximately one month earlier. The corn was served in varying quantities to 7 members of the family. Five became ill 18 to 60 hours following the meal. The severity of the symptoms appeared to correlate with the amount consumed.

The fatality occurred in a 12-year old daughter who began experiencing vomiting, diarrhea, diplopia, dysphagia, generalized weakness, and respiratory difficulty about 18 hours after she had eaten two dishes of the corn. Three days after ingestion she was taken to a local physician who prescribed chewing tobacco for her vomiting. The following day she was taken to another physician who diagnosed botulism and prescribed antitoxin, but the patient died on 20 September 1963. Autopsy demonstrated only hyperemia of the brain.

The four other victims included the mother and three children. The mother ate one dish of the corn. Two days later she experienced diplopia, dysphagia, and weakness without vomiting or diarrhea. A 14-year old son ate one dish and two additional tablespoons of corn. He developed diarrhea, diplopia, dysphagia, and weakness 48 hours later. He also experienced "asthmatic

breathing" which responded to adrenalin. A 9-year old daughter consumed a dishful of corn, and about 60 hours later she began to experience diplopia, nasal speech, a sore throat, vomiting, diarrhea, and weakness. A 5-year old daughter consumed no more than two teaspoons of the corn, yet developed diarrhea, dysphagia, diplopia, and muscle weakness. All received bivalent antitoxin.

Two other members consumed very small quantities of the corn and demonstrated symptoms to a minor degree only. The father ate less than one teaspoon of the corn. He experienced diarrhea and abdominal cramping as well as a tightness in his throat, but was not officially reported as a case. Although the father noted that the corn tasted bad and smelled worse, he did not actively prevent the other members of the family from eating this particular food.

Three other children in the family were asleep during the meal and did not consume any corn; none of these 3 became ill at any time.

Corn from the family garden had been cold packed in sterilized jars and boiled for 4 1/2 hours, then allowed to cool after the addition of salt. In addition to the quart jar, four 1/2-gallon jars were also prepared and stored in the family chicken coop. At one time during the period of storage the jar tops were changed in the coop.

All of the contents of the quart jar were consumed by the family. The jar was cleaned with detergent by the mother and was not available for laboratory studies. The four other 1/2-gallon jars of corn were submitted for laboratory studies, and from one of these four, Type B toxin was demonstrated and C. botulinum was cultured.

California. Six cases of botulism, including one death, were reported following a 25th anniversary dinner celebration for a Parish priest. The dinner, held June 30th, was attended by 300 people. The source of the botulism outbreak appears to have been home canned mushrooms.

A 47-year old female, who attended the affair, noted double vision approximately 26 hours following the meal. Two days later, because of difficulty in speaking and swallowing, she was admitted to a hospital. On the 6th day after the meal, the patient died following an angiogram to rule out a suspected brain tumor. An autopsy was performed but did not reveal the cause of death. The coroner's office, however, reported the case as possible botulism; an epidemiological investigation began. At that time, it was learned that another patient with similar symptoms, in a different hospital, had also attended the same affair. This patient's physician had diagnosed botulism and had administered botulinus antitoxin. The brother of this same patient experienced similar symptoms but was not hospitalized. Three others attending the dinner were found to have symptoms consistent with botulism. None of these four received antitoxin. Another patient, who complained of spots before her eyes and numbness of tongue and teeth, was diagnosed as not botulism.

The woman in charge of the food preparation did not know the source of the suspected mushrooms. Her husband had received a number of jars, including the mushrooms, from an unidentified woman, whom he presumed

was a Parish member. Yet no member acknowledged this contribution. A kitchen worker remembered emptying 3 quart jars of home prepared mushrooms into a bowl for serving. No mushrooms remained following the meal. Although all 7 individuals who had nervous system symptoms ate the mushrooms, several other persons did likewise. Many who tasted the mushrooms thought they were not good and did not eat them.

Samples of the remaining food, including bologna, salami, sausage, cream cheese, and turkey were submitted to the Los Angeles City Health Department Laboratory, as well as to the Food and Drug Administration Laboratories. All samples were negative for cultures of *C. botulinum*. Injection of suspensions of the food into mice did not cause a single fatality.

Los Angeles City Health Department officials presumed that the mushrooms were improperly home prepared. The probability that only one of the 3 jars of mushrooms was contaminated with *C. botulinum* may have accounted for the lack of symptoms in those who ate the mushrooms but remained well.

Botulism Related to Smoke Fish Ingestion. From September 29-October 7 a sharp outbreak of botulism related to the ingestion of smoked fish products has resulted in 13 cases of the disease with 6 fatalities, among 7 members of 3 different families in Knoxville, Tennessee, in 3 unrelated individuals in Nashville, Tennessee, a boy in Huntsville, Alabama, and in a husband and wife in Kalamazoo, Michigan.

Four Tennessee cases have been treated with Type E antiserum. Connaught Medical Research Laboratories, Toronto, the sole supplier, reports that the supplies of Type E botulinum antisera are quite limited. These include both the monovalent Type E and polyvalent ABEF of Danish manufacture. Usual treatment of clinical cases consists of an initial dose of two vials (one IV and one IM). It was suggested that all cases with significant symptoms and a history of ingesting smoked fish be treated with Type E antisera in one of the available forms. Additional supportive therapy directed at problems of respiratory depression has included tracheotomy as well as the use of tank respirators.

According to the records of the Communicable Disease Center, Atlanta, Ga., only 6 previous outbreaks of Type E botulism are known to have occurred in the United States, Table I. It will be noted that with the exception of the San Francisco outbreaks in 1941, all outbreaks of Type E botulism in the United States have been related to fish products and raw white whale flippers (not strictly a fish product).

Three additional cases of botulism, including 2 deaths, related to the ingestion of smoked fish were

Table 1

KNOWN OUTBREAKS OF <i>C. BOTULINUM</i> TYPE E IN THE UNITED STATES				
Year	Number of Cases	Number of Deaths	Location	Contaminated Food Items
1934	3	1	Westchester, N. Y.	Commercially canned sprats from Germany
1934	3	1	Cooperstown, N. Y.	Labrador smoked salmon
1941	3	1	San Francisco, Calif.	Mushrooms from Yugoslavia canned in California
1950	5	0	Point Hope, Alaska	Raw white whale flipper
1960	2	2	Minneapolis, Minn.	Plastic vacuum packed smoked ciscoes caught in the Great Lakes
1963	3	2	Wayne County, Mich.	Tuna fish canned in California
Total	19	8		

reported during the week ending October 12, 1963, bringing the total to 16 cases and 8 deaths for this outbreak, Table II. This included a fatality in a 7-year old boy from Huntsville, Alabama, and 2 cases from Nashville, Tennessee, one of which was fatal.

TABLE II
BOTULISM CASES - TENNESSEE - MICHIGAN - ALABAMA
EPIDEMIOLOGICAL DATA

CASE	AGE	SEX	DATE, TIME INGESTION	INTERVAL, IN HOURS, FROM INGESTION TO		
				GI SYMPTOMS	NEURO SYMPTOMS	DEATH
<u>Knoxville, Tennessee</u>						
Family A						
Case #1	42	M	10/2 6PM	12	108	Alive
#2	41	F	10/2 6PM	12	170	Alive
Family B						
Case #3	32	M	10/5 10AM	6½	5	46
#4	10	F	10/5 10AM	8	18	48
Family C						
Case #5	39	F	10/6 1PM	7	75	Alive
#6	10	F	10/6 1PM	7	26	Alive
#7	8	F	10/6 1PM	7	26	Alive
<u>Nashville, Tennessee</u>						
Case #8	37	M	9/28 11AM	16	20	53
#9	53	M	10/6 5PM	13	15	Alive
#12	52	F	10/5 2-6PM**	13-17	13-17	30
#14	47	M	9/28 11AM	16	16	173
#15	54	M	10/4 7PM	17	90	Alive
<u>Huntsville, Alabama</u>						
Case #13	5	M	10/4 11:30AM	21	48	Alive
#16	7	M	10/1 *	*	*	Died 10/2
<u>Kalamazoo, Michigan</u>						
Family D						
Case #10	64	M	10/1 3PM	11	13	21
#11	62	F	10/1 3PM	11	13	24

* Specific information not available yet.

** Ate 3 fish at 2, 4 and 6 PM.

The average incubation period, based on the onset of gastrointestinal symptoms, was 20 hours, varying from 6 1/2 to 21 hours. The average interval between ingestion and onset of neurological symptoms was 39 hours, with a range from 5 to 108 hours. Fourteen of the victims had eaten the commercially prepared plastic wrapped product known as "vacuum packed smoked whitefish chubs" processed by the H. J. Dornbos and Brother Company of Grand Haven, Michigan and distributed by Kroger's super markets.

Notably, only 3 of the 16 victims are known to have noted a bad or different taste to the fish. None reported that the fish had a bad odor.

The Whitefish chubs were caught by gill nets in Lake Michigan on September 16. After devisceration, dressing and icing aboard the fishing boat, the chubs were reported by Dornbos to have been processed in the following manner: they were first chilled for one day at 35° F., then smoked at 180° F. room temperature (175° minimum room temperature) for 5 hours, then placed in the chill room at 35° F. for one day. Finally, they were vacuum packaged in clear plastic wrapping, ready for shipment.

The Kroger shipment left Grand Haven, Michigan, on September 19 by truck. It was delivered to Kroger's warehouse in Nashville on September 26. Although the shipment left Grand Haven packed in dry ice, it is as yet uncertain whether it was adequately refrigerated throughout the trip. It was distributed to 18 Kroger supermarkets on September 26 and placed on sale in Nashville,

September 27, and in Knoxville, September 30. The Kroger chain has removed the product from its shelves since 7 October.

Laboratory studies carried out at the R. A. Taft Sanitary Engineering Center and at the Food and Drug Administration have thus far revealed C. botulinum Type E and Type E toxin in fish bones recovered from the home of Family C and from a fish remaining in the Family B home. Oil from the package from which Case 9 consumed a fish has been shown to contain Type E toxin. Testing of packages of fish, not yet sold and unrelated to cases, has revealed Type E toxin in approximately one-third of the packages.

There has been no link established between the 2 Michigan cases and the cases in Tennessee and Alabama. The Division of Microbiology, Food and Drug Administration, reports Type E botulinus toxin was demonstrated in remnants of the fish as well as in liver and cardiac blood samples from the victims. The smoked fish eaten by the Michigan couple was a large whitefish (apparently not the same fish packaged by Dornbos); it is said to have been purchased from a roadside stand when the couple took a long weekend trip through northern Michigan. The source of this whitefish has not been determined.

The Communicable Disease Center, Atlanta, Georgia, has received reports of 32 botulism cases thus far in 1963, which represents the greatest number of cases for any one year during the past decade, Table III.

Of the other 1963 cases, only 3 have been attributed to Type E.

This outbreak in Detroit was traced to tuna fish commercially canned in San Francisco.

Table III

<u>BOTULISM - 1954-1963</u>			
<u>YEAR</u>	<u>CASES*</u>	<u>YEAR</u>	<u>CASES*</u>
1954	18	1959	20
1955	16	1960	12
1956	20	1961	14
1957	26	1962	10
1958	6	1963	32

*Source: State Reports received by Communicable Disease Center.

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An Interesting Viral Relationship

Index, Los Angeles County Health Dept., Los Angeles, Calif., Week of August 3, 1963.

The impression—first suggested 75 years ago by J. Von Bokay—that the etiologic agents of chickenpox and herpes zoster are closely related has been strengthened by much recent laboratory investigation. That this original epidemiologic observation was made only 13 years after chickenpox was experimentally proven infectious, is all the more remarkable.

Varicella (chickenpox) and herpes zoster (zona, shingles, zoster) are presumably different phases in the activity of a single agent—the VZ (varicella-zoster) virus. Chickenpox is the syndrome which is the result of the initial invasion of the VZ virus, resulting in the well-known generalized mild infection usually of children. Its major characteristics are fever, and an itching, vesicular exanthem and an enanthem. Herpes zoster, on the other hand, is a much

more painful infection, chiefly seen in adults. There is a reactivation of localized latent VZ virus, or reinvasion of the VZ virus, in the posterior nerve root area. There is inflammation of nerve ganglia with a crop of vesicles in the areas supplied by sensory nerves. The vesicles of chickenpox and herpes zoster generally are considered to be identical. Adult herpes zoster, which is thought to result from an exposure to chickenpox usually appears in 3 to 7 days; this points to an incubation period of zoster.

Various laboratory efforts suggest a close, possibly identical, etiologic relationship between varicella and herpes zoster. Electronmicrographic studies show that the viral bodies from the vesicles of both are identical in appearance. Similarly, neutralization, complement-fixation, neutralization and fluorescent antibody tests further suggest the identical characteristics of the varicella and zoster viruses. Certain differences have been mentioned by various workers in the study of the relationship between the two syndromes, such as:

Varicella

1. In children; more often induces zoster in adults than in children.
2. Usually endemic, may become epidemic.
3. A disease of childhood, rare in persons over 20 years of age.
4. 90% of all people infected by age of 20.
5. Males and females equally affected.
6. Very communicable.
7. Frequently develops following contact with herpes zoster.
8. Recovery confers lasting immunity.

Herpes Zoster

1. Frequent source of varicella in children.
2. Usually sporadic.
3. A disease of adults, rare before 20 years of age.
4. Very low incidence before 20 years of age.
5. Slightly more frequent in males.
6. Slightly communicable.
7. May develop infrequently in a person following exposure to a known case of chickenpox.
8. May develop after prior chickenpox.

If, indeed, as evidence suggests, herpes zoster is really a disease caused by a latent H2 virus and is not a reinvasion infection, there is the extremely important circumstance of an immune host becoming the source of a viral spread of disease.

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Know Your World

Did you know:

That in 1962, as in previous years, air and maritime traffic did not lead to any spread of yellow fever? Surveys are under way in several countries situated within the yellow fever endemic zone to detect evidence of presence of the virus (viscerotomy, serology, isolation of the virus from man and mosquitoes). (1)

That the introduction of vaccination against yellow fever with approved vaccines is still too recent to determine the duration of the immunity conferred? The most ample information on this subject so far has been provided by a study carried out in Brazil, by Groot, H. and Ribeiro, R. B. WHO 27(6): 699, 1962. (2)

That smallpox still persists in parts of Africa and Asia, and to a lesser extent in South America? These endemic areas are a threat not only to the countries in which they are found but also to their neighbors and, to all countries free from disease. The number of susceptible persons gradually increases with time, and the disease may suddenly flare up in outbreaks or epidemics that do not respect frontiers. These occur in cycles of usually between 5 and 7 years. The epidemics of 1951, in which there were nearly half a million cases, and of 1957-58, with nearly 400,000 cases, are a warning of what may happen in 1963 if control measures are not strictly enforced both nationally and internationally. (3)

That the most important consequence of the discovery of DDT was that measures could be instituted to control malaria, a disease producing more than 200 million cases and 2 million deaths annually?

No biological control methods have been developed so far in the public health entomology field to give desired control at economic cost. The use of insecticides in public health has given rise to little undesirable side effects. (4)

That the absence of manganese metal from the diet of a female pigeon or female rat results in complete loss of the "mother instinct" in those animals thus deprived? She will not feed her young, and smothers them in the nest. (5)

That in mid-June, 1963, the Division of Communicable Disease Control of the Vermont State Department of Health learned of the occurrence of 6 cases in young men of an indolent infection involving the upper extremities; and all of these men had been planting white spruce, white pine and other conifers obtained from a regional tree nursery?

The infections were characterized by an unhealing primary lesion on the thumb or lower forearm, and a chain of subcutaneous nodules, often with thickened lymphatics, extending up the forearm and upper arm. Many of the nodules were dusky red in color. Clinically the infections appeared to be sporotrichosis. No systemic symptoms were noted and leukocyte counts were normal. Cultures positive for Sporotrichum schenckii were obtained in 5 cases,

Know Your World (Continued)

and smears of exudate were positive by the fluorescent antibody test in 3 of the 5 cases.

To date, 11 cases have been found. There is a marked similarity in the patients, 10 of whom worked with the trees during the latter part of April. The primary lesion was on the thumb in 2 cases and in all cases there had been exposure to moss.

Efforts are continuing to locate all personnel who may have handled the seedlings, and to determine the common source of the outbreak. (6)

That the Food and Drug Administration, U. S. Department of Agriculture, has recently advised physicians and dentists that 3 types of widely used tetracycline antibiotics, namely, tetracycline, chlortetracycline and oxytetracycline (terramycin) can discolor children's teeth, probably permanently?

Manufactures of these antibiotics have been directed to include a notice in the labeling that use during tooth development (last trimester of pregnancy, neonatal period, and early childhood) may cause discoloration. (7)

Bibliography:

- (1) Weekly Epidemiological Record, WHO, Geneva, No. 36, pp. 458, 6 Sep 1963.
- (2) Tropical Medicine and Hygiene News, Amer. Soc. of Trop. Med. & Hygiene, Vol. 12, No. 4, pp. 4, Aug 1963.
- (3) WHO Chronicle, Vol. 17, No. 8, pp. 284, Aug 1963.
- (4) Public Hlth Engineer, Abstracts, DHEW, Vol XLIII, No. 9, Abstract No. 1620, pp. 287, Sep 1963.
- (5) This Week in Public Health, Mass. Dept. of Pub Hlth, Vol. 12, No. 25, pp. 243, 24 June 1963.
- (6) Morbidity and Mortality Wkly Rep. DHEW PHS, Vol. 12, No. 27, pp 223, 12 July 1963.
- (7) Public Hlth Reports, Vol. 78, No. 7, pp. 587, July 1963.

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Epidemiological Notes
Cholera in 1962

In 1962 the total figures reported to the World Health Organization for cholera throughout the world amounted to 39,396 cases and 11,634 deaths. These statistics include cholera El Tor which, since 1961, has made its appearance in

several countries of the Western Pacific, whereas in previous years it was restricted to the south of Sulawesi (Celebes) in Indonesia.

The appearance of this variety, considered until then a non-quarantinable disease outside its classical foci, created a new situation which led to the convening on 3 May 1962 of a special meeting of the Committee on International Quarantine. The group recommended that cholera El Tor be regarded as a form of classical cholera and treated as such, from the quarantine viewpoint. This recommendation was approved by the Fifteenth World Health Assembly on 23 May 1962, on which date notification to WHO became compulsory under the International Sanitary Regulations.

Endemicity. The degree of endemicity of the disease in various local areas of different countries is shown by the number of weeks when cases were notified in each area during 1962.

In India, four districts of West Bengal (lower valley and delta of the Ganges) notified cases during more than 26 weeks, as against four districts in 1961; among them, Calcutta reported cases during 52 weeks in 1962 (52 in 1961), Howrah during 45 weeks in 1962 (49 in 1961) and 24-Parganas during 43 weeks in 1962 (48 in 1961); in the states in the center of the west coast (Maharashtra and Mysore) five adjacent districts notified cases during more than 26 weeks.

In East Pakistan, two districts notified cases during more than 26 weeks in 1962, as against only one district in 1961. The Philippines and Indonesia were the only local areas reporting the disease more than 13 weeks. In the Philippines, sixteen towns or provinces reported cases for 14 to 25 weeks. In Indonesia the port of Makassar (South Sulawesi) reported the disease for 14 weeks.

The following facts may help to reveal the routes of transmission, although it is rarely possible to determine exactly who has introduced the disease into a territory.

1. In Indonesia, 1 case transferred from Sulawesi to Java caused a focus near Kendal on the north coast of Central Java, in May 1961.
2. The first cholera El Tor case observed at Kuching, Sarawak, occurred on 1 July 1961 in that part of town where boats were anchored which had come from Sulawesi to take part in a regatta at the end of June.
3. In the Philippines, the first 2 cases, diagnosed at Manila in September 1961, had close contacts with the northern port district of Manila where ships from many neighboring countries call.
4. In North Borneo, cholera El Tor was introduced at Sandakan by a Filipino who died in that town on 18 January 1962.

In conclusion, the incidence of cholera remained relatively low throughout the world, with the majority of cases being from India and East Pakistan. Cholera El Tor reached an increasing number of countries in the Western Pacific in 1962, with cases in the Philippines during the whole of the year.

—WHO Weekly Epidemiological Record (38): 438-445, 30 August 1963

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RESERVE**SECTION**

Uniform Regulations
for Naval Reservists

The Chief of Naval Personnel has published a new policy for wearing of the uniform by Naval Reservists on inactive duty training without pay, and to encourage the wearing of the name plate on the uniform by all drilling Reservists. This new policy appears in BUPERS NOTICE 1020 of 7 October 1963.

Article H-31501 of the BUPERS MANUAL requires the wearing of the uniform at drills by all Naval Reservists attached to or associated with Selected Reserve Units, and by those in pay status attached to or associated with Specialist, Composite, and NROS Programs. The wearing of the uniform at drills by other personnel is authorized and should be encouraged. In order to assure that uniforms of drilling personnel not in a pay status are kept up to acceptable standards, a minimum of once a quarter is being established as a requirement for attending drill in uniform.

U. S. Navy Uniform Regulations establishes specifications for name plates, and authorizes their wear in the performance of duties when an easy method of identification is desirable or beneficial in furtherance of the mission of the command. It is considered that identification is beneficial to the mission of all drilling programs.

The Notice requires that Commanding Officers of all Naval Reserve Units not in the Selected Reserve Program shall designate at least one drill during each calendar quarter as a "drill in uniform" and shall prescribe the uniform. Such drills shall begin with a formal uniform inspection. Appropriate action shall be taken to correct any discrepancies.

The Notice also requires that Commanding Officers of all drilling units shall encourage the purchase and wear of name plates by all members. Specifications of the name plate and the position in which it is to be worn on the uniform are set out in Article 1158 of U. S. Navy Uniform Regulations.

Commanding Officers of Reserve Units may inquire of the Naval Reserve Group Commander concerning arrangements which may have been made with a Navy Exchange or other commercial source for manufacture of proper name plates.

In order that Medical Reservists may wear their uniforms properly and with pride, periodic notifications concerning the Naval uniform will be published as needed.

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American Academy of Optometry
Holds Annual Meeting

The annual meeting of the American Academy of Optometry will be held at the Drake Hotel, in Chicago, Illinois during the period 7 December to 10 December 1963. One retirement point per day may be credited to eligible inactive Naval Reserve Medical Department officers for attendance at the sessions of the military symposium sponsored, supervised and conducted by the Bureau of Medicine and Surgery. The Bureau will be represented by CAPT R. L. Vasa MSC USN. Each session will be at least two hours in duration.

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American Academy of Dermatology
to Hold Annual Meeting

The annual meeting of the American Academy of Dermatology will be held at the Palmer House, Chicago, Illinois during the period 30 November to 5 December 1963. One retirement point per day may be credited to eligible inactive Naval Reserve Medical Department officers for attendance at the sessions of the military symposium sponsored, supervised and conducted by the Department of the Air Force.

The Commandant, NINTH Naval District, has been directed to designate a representative to be present at this meeting to record the attendance of qualified officers.

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Navy Ensign 1915 Medical Program
(Continued)

Naval Internships

1. A Naval internship is twelve months in duration and rotating in type. In general it provides rotation on the following services:
 - a. Surgical Service, including Urology and Orthopedics
 - b. Medical Service, including Contagion
 - c. Obstetrics and Gynecology
 - d. Pediatrics
 - e. Elective in Laboratory, Ophthalmology, Otorhinolaryngology, Neuropsychiatry, Radiology, Dermatology, or additional Medicine, Surgery, Pediatrics or Obstetrics and Gynecology.
2. Clinical Pathological Conferences, Staff Meetings and Journal Clubs are well organized in all naval hospitals and interns are encouraged to take an active part in these meetings.

Naval Internships (continued)

- 3. These internships compare most favorably with the best civilian hospital internships and each year the number of applicants exceeds the number of naval internships available, usually by a ratio of two to one. The Navy carefully selects the most outstanding applicants, and in this selection, every possible preference is given to the Ensign 1915, U. S. Naval Reserve.
- 4. Naval internships are not mandatory upon the Ensign 1915. Should an Ensign 1915 enroll in the Senior Medical Student Program and choose a civilian internship rather than a naval internship, he will be on inactive duty during this period. Following completion of the civilian internship, he will be placed on active duty in accordance with the previous service contract.

(To be continued)

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